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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,124

06/25/2004

Katsuhiko Takahashi

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EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

11/13/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/500,124	<b>Applicant(s)</b> TAKAHASHI ET AL.	
	<b>Examiner</b> KHANH T. NGUYEN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,9,11-18 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9,11-18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Final***

***Response to Amendment***

1. The amendment filed on 09/03/2009 is entered and acknowledged by the Examiner. Claims 1, 4-6, 9, 11-18, 20-24 and newly added Claim 25 are currently pending in the instant application. Claims 2-3, 7-8, 10 and 19 have been previously canceled without prejudice.
2. The rejection of Claim 1,4-6, 9, 11-18 and 20-24 under 35 U.S.C. 103(a) as being unpatentable over Kudas et al. (U.S Pat. 6,951,666 B2) in view of Morrison, Jr. (U.S. Pat. 5,242,623) is maintained for the reasons herein.

***Information Disclosure Statement***

3. No additional information disclosure statement (IDS) was filed.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Method Claims 11 and 13 depend from composition Claim 1. A method claim can not depend from a composition claim. Claim 12 depend from Claim 11, thus contain the same deficiency.

***(Previously Rejected)***

***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. The amendment to Claims 1, 5-6 and 9-13 are noted. The addition of Claim 25 have been considered. However, the amended claims and additional claim remain unpatentable over the prior art of record for the reasons set forth below.

8. Claim 1, 4-6, 9, 11-18, and 20-**25** under 35 U.S.C. 103(a) as being unpatentable over Kodas et al. (U.S. Pat. 6,951,666 B2) in view of Morrison, Jr. (U.S. Pat. 5,242,623).

With respect to claims 1, 4-6, 9, 13-18, and 20-24, Kodas discloses precursor composition (i.e. electrically conductive

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paste) forming a thick-film on a substrate such as plastic by screen printing (Col. 1, lines 21-24; Col. 27, lines 3-23; Col. 29, lines 22-25; Col. 37, lines 64-68). The precursor composition may comprise of metal precursor of micron-sized or nanoparticle having two different particles size (i.e. bimodal), wherein the micron-sized particle (larger mode) has an average size of 1-10  $\mu\text{m}$  and the nanoparticle (smaller mode) has average size of about 10-100 nanometers, that is equivalent to an average particle size of about 0.01-0.10  $\mu\text{m}$  (Col. 4, lines 24-25; Col. 24, lines 45-48; and Col. 6, lines 4-20). The precursor composition further comprises of solvents, a vehicles, a reducing agent and other additives such as dispersant (Col. 2, lines 58-61 and Col. 4, lines 15-20). Kodas also discloses silver metal precursor are preferred, in particular, silver nitrate, silver oxide and silver carbonate (Table 1, Col. 8, lines 63-67 and Col. 14, lines 18-19). Kodas discloses a method of obtaining the silver metal precursor by vapor deposition method such as CVD or PVD (Col. 6, lines 36-63). The reference further discloses a inducing agent (i.e. reducing agent) such as alpha terpineol (pine oil) or other low vapor pressure solvent such as diethylene glycol, ethylene glycol, hexylene glycol, NMP, tri(ethylene glycol) dimethyl ether and ethylene glycol diacetate capable of reducing silver oxide to silver at low

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temperature (Col. 13, lines 57-64, Col. 15, lines 46-53 and Table 4). The reducing agent is preferably at least about 20-60 weight percent (Col. 15, lines 21-28). Kodas discloses the electrically conductive paste composition may be printed onto a substrate (Col. 29, lines 10-21) and follow by heat treatment (Col. 29, lines 45-50) to form a metallic film (Col. 32, lines 46-52; and Table 6). Kodas further discloses a rheology modifier for improving particle dispersion is selected from styrene allyl alcohol, *ethyl cellulose*, *carboxyl methylcellulose*, *nitrocellulose*, polyalkylene carbonates, ethyl nitrocellulose and the (Col. 20, lines 46-55).

The difference between the instant application and Kodas disclosure is that Kodas suggest using ethyl cellulose, carboxyl methylcellulose and nitrocellulose instead of the claimed hydroxypropyl cellulose as a dispersant.

In an analogous art of screen printable thick film paste, U.S. '623 teaches a screen printable thick film paste useful as a conductive, resistive or dielectric material that can be applied onto an electrical insulating material such as alumina and ceramic (Col. 1, lines 13-16; Col. 2, lines 27-30 and line 59). The thick film resistor paste may contain resistive material such as metal oxides or noble metal (e.g. Ag) having a preferred particle size in the range of 0.1-10 microns (Col. 2,

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lines 33-53). The metal oxides is mixed in an organic medium comprising of a resin selected from *ethyl cellulose*, *cellulose nitrate*, *hydroxyethyl cellulose*, *ethylhydroxyethyl cellulose*, *carboxymethyl cellulose*, *hydroxypropyl cellulose* and the mixture and the derivatives thereof dissolved in a solvent such as alpha- or beta-terpineol (*pine oil*) and alcohols (Col. 3, line 10 to Col. 4, line 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the screen printable thick film paste of Kodas by substituting the ethyl cellulose, carboxyl methylcellulose and nitrocellulose of Kodas with hydroxypropyl cellulose of U.S. '623 because such substitution is explicitly suggest by the prior art. The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. In addition, the composition suggest by the prior art contains similar compounds as claimed, thus it would generally be expected to have similar properties (e.g. volume resistivity (W), specific gravity (X), the number of pores (Y) and viscosity as recited in claims 1, 9, 21, and 23) since it has been held by the court that structurally similar compounds are generally be expected to have similar properties. *In re Gvurik*, 596 F. 2d 1012, 201 USPQ 552. For example, both Kodas (Abstract) and U.S. '623 (Col 4, lines 30-40) teach a thick film paste composition

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having similar viscosity as the claimed composition.

Furthermore, the court has held that compositions are indefinite for being defined in terms of properties alone. *Ex parte Spacht*, 165 USPQ 409 (PO Bd Pat App 1969); *Ex parte Slob* 157 USPQ 172 (PO Bd Pat. App 1967); *Ex parte Pulvari*, 157 USPQ 169 (PO Bd Pat. App 1966).

Claims 11 and 12 are product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

Regarding claim 20, the lower limit of the instant claim includes 0 (zero) parts of dispersant, hence, the reference need not teach the presence of dispersants.



Regarding claim 21, U.S. '623 discloses a viscosity within the claimed range (Col. 4, lines 30-40). Kudas discloses a viscosity of at least about 1000 centipoise, the viscosity of Kudas is at least about 10 poise (Abstract).

Regarding **Claim 25**, Kudas discloses the precursor composition may comprise of metal precursor of nanoparticle (smaller mode) having an average size of about 10-100 nanometers, that is equivalent to an average particle size of about 0.01-0.10  $\mu\text{m}$  (Col. 4, lines 24-25; Col. 24, lines 45-48; and Col. 6, lines 4-20).

In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

### ***Response to Arguments***

9. Applicant's arguments filed on 09/03/2009 have been fully considered but they are not persuasive.

In response to the Applicant's remark on pages 8-9, Applicant argues that the present claims are patentable over the combination of Kudas and Morrison, at least because Kudas and Morrison fail to disclose an electrically conductive coating, formed by coating and heating the claimed electrically conductive paste, wherein the silver particles of the coating are mutually fused.

The Examiner respectfully disagrees with Applicant's argument for at least two folds. First, the present claims are drawn to an electrically conductive paste and not the final product of electrical conductive coating as argued. Thus, the prior art to Kodas and Morrison need not disclose or suggest the final product of electrical conductive coating. Second, the process of obtaining the final product of electrical conductive coating by coating said paste follow by heating is not given patentable weight since the patentability of the product does not depend on its method of production. It should be noted that both Kodas and Morrison disclose the same or substantially same process steps of coating, i.e. applying the electrically conductive paste onto as substrate, follow by heating, i.e. sintering or firing as claimed (See Kodas Col. 28, lines 36-39 and Col. 30, lines 48-50; See Morrison Col. 1, lines 18-24). Therefore, the electrically conductive paste of Kodas in combination with Morrison is expected to form an electrical conductive coating after the paste is applied to a substrate and heated. Furthermore, the silver particles of the coating are expected to mutually fuse because Kodas and Morrison disclose the paste being subjected to the same or substantially same process wherein the silver particles of the coating are heated to cause them to mutually fuse as described in the instant

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specification (See Page 6, 2<sup>nd</sup> paragraph of the instant specification). The Applicant is invited to provide factual evident to show that the paste as suggested by Kodas and Morrison does not form an electrically conductive coating after the paste is applied to a substrate and heated.

Applicant further argues that the cited art failed to disclose a volume resistivity of an electrically conductive coating that is close to the level of volume resistivity of metallic silver.

The Examiner respectfully disagrees with Applicant's argument. The cited art to Kodas and Morrison disclose an electrically conductive paste comprising of all the claimed ingredients within the claimed proportions. Kodas and Morrison also suggest subjecting the electrically conductive paste to heating which would form an electrically conductive coating as claimed. Thus, the electrically conductive coating of Kodas and Morrison is expected to have similar volume resistivity as claimed. It is known that "products of identical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re*

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*Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (fed. Cir. 1990).

See MPEP 2112.01 II.

Based on the above rational, it is believed that the claimed limitations are met by the reference submitted and therefore, the rejection is maintained.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T.

NGUYEN whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 7:00-4:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/  
Primary Examiner, Art Unit  
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/KTN/  
Examiner

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